

LIVERMORE LAB REPORT

A weekly compendium of media reports on science and technology achievements at Lawrence Livermore National Laboratory, Sept. 2-5, 2014. Though the Laboratory reviews items for overall accuracy, the reporting organizations are responsible for the content in the links below.



The Lab's high performance computing is attracting outside businesses.

Lawrence Livermore National Laboratory is open for business when it comes to transferring some of its advanced technologies to the private sector.

Some of those technologies include the world's largest laser, which is being used by LLNL researchers to re-create the conditions inside giant planets, a feat that can change the way we see the universe.

Other areas open to the private sector include high performance computing.

"We're getting cold calls now," said LLNL's Fred Streitz, director of the High Performance Computing Innovation Center.

To see more, watch the [NBR video](#).

diablo 40 UNDER 40
MAGAZINE



Matthew Myrick and Kedar Shah have been named two of the 40 under 40.

Two Lawrence Livermore researchers grew up to be stars in the East Bay community -- and they haven't even hit the big 4-0 yet. Kedar Shah and Matthew Myrick have both been named to *Diablo Magazine's* list of "40 under 40."

Shah, 30, of San Francisco is principal investigator of the Lab's Biomedical Microsystems. He is revolutionizing microfabrication technologies to miniaturize implantable medical devices. His aim? To treat neuropsychiatric diseases and restore memory loss associated with traumatic brain injury.

Myrick, 35, of Dublin is a cybersecurity architect at the Lab who deals a lot with spam. Spam is a problem faced by every computer user and is more than just an annoyance: Lawrence Livermore Lab receives anywhere from 3.5 million to 7 million spam or malicious emails each month. Myrick defends the Lab's computer networks.

To read more, go to [*Diablo Magazine*](#).

livermore
spectrum **A TRIP DOWN MEMORY LANE**



Lawrence Livermore engineer Vanessa Tolosa holds up a silicon wafer containing micromachined implantable neural devices.

The first memory-enhancing devices could be implanted in four years. That's the task that the Defense Advanced Research Projects Agency (DARPA) is giving to Lawrence Livermore and collaborators.

Lawrence Livermore engineers are developing more closed-loop hardware. At Livermore's Center for Bioengineering, researchers are leveraging semiconductor manufacturing techniques to make tiny implantable systems. They first print microelectrodes on a polymer that sits atop a silicon wafer, then peel the polymer off and mold it into flexible cylinders about 1 millimeter in diameter.

The memory prosthesis will have two of these cylindrical arrays, each studded with up to 64 hair-thin electrodes, which will be capable of both recording the activity of individual neurons and stimulating them.

Researchers believe the device will be ready for tryout in patients with traumatic brain injuries within the four-year span of the program.

To read more, go to [IEEE Spectrum](#).

The Sunday Guardian HARNESSING THE SUN IN SPACE



Solar arrays in space may not be so farfetched, according to scientists.

Space-based solar energy may be the power plants of the future.

The dream of solar power has been around for a long time, whether it is building solar arrays in the high open deserts in Mojave or the proposed solar project in North Africa that may take care of all the energy needs of Europe. The biggest dream of all is, of course, solar panel arrays in space.

Over time, scientists have come up with two ways to do this. The first would be to convert the light into laser power. A moderate-sized satellite could be launched into a low-Earth orbit -- about 400 kilometers up -- and once assembled, would beam a focused laser beam back to a generating system on Earth. The basic technology needed to convert solar energy into a focused laser beam is smaller than a kitchen table. A prototype of this type of laser was tested at Lawrence Livermore in 2002, and a working model is under production.

To read more, go to [The Sunday Guardian](#).

LaserFocusWorld[®] LEADING A GIANT



Ed Moses

Ed Moses, the former principal associate director for the National Ignition Facility & Photon Science Directorate at Lawrence Livermore, has been appointed by the Giant Magellan Telescope Organization (GMTO) as president of their organization, effective Oct. 2.

Moses is an expert in laser science, optical systems, technology development, systems engineering and project management, and has played key roles in major LLNL programs over the last 35 years, including Atomic Vapor Laser Isotope Separation, Peregrine, NIF and the National Ignition Campaign.

The Giant Magellan Telescope, a billion-dollar, 25-meter telescope, will be located at the Las Campanas Observatory in Chile. The GMT will be significantly larger than any telescope in existence and will be used to discover and characterize planets around other stars, to probe the formation of stars and galaxies shortly after the Big Bang, to measure the masses of black holes and to explore fundamental issues in cosmology and physics, including dark matter and dark energy.

To read more, go to [Laser Focus World](#).

LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance. To send input to the *Livermore Lab Report*, send [e-mail](#)